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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/560,658	12/13/2005	Alan Robert Chapman	M8540/303808	2272

7590 02/04/2010  
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EXAMINER
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MOHADDES, LADAN

ART UNIT	PAPER NUMBER
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1795

MAIL DATE	DELIVERY MODE
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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/560,658	<b>Applicant(s)</b> CHAPMAN ET AL.	
	<b>Examiner</b> LADAN MOHADDES	<b>Art Unit</b> 1795	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 October 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>09/15/2009</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-6, 10-12, 14, and 16-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Turpin (GB 2375222, already of record).

Regarding claims 1, 2, and 17-20, Turpin discloses a flow field plate (which can be used as a separator) for a fuel cell or electrolyser (page 1, paragraph [1]) with a tiled array of flow field segments comprising a branched primary gas/fluid channels (Fig. 2, 104) feeding narrower secondary fluid diffusion channels (Fig. 2, 103, 102) defined by arrays of land in between and channels forming an interconnected network of fluid diffusion channels (channels 103 and 102 are forming an interconnected network).

Regarding claims 3-6, Turpin discloses both flow field segments that are in parallel and in series with respect to each other (Fig. 2).

Regarding claims 10 and 11, Turpin discloses both lands that are shaped to define diffusion channels with constant and variable channels (compare channels 102 with another 102 and 103 in Fig. 2 as an example).

Regarding claim 12, Turpin discloses that the shape of the lands are non-circular and differ from the symmetry of a group of lands (Fig. 2).

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Regarding claim 14, Turpin discloses that the lands are polygonal.

Regarding claim 16, Turpin discloses pointed triangular corners of impermeable land which provides choke point for fluid passage.

Regarding claim 20, Turpin does not disclose that the power deliverable by each flow field plate is in excess of  $750 \text{ mW.cm}^{-2}$  calculated on the working surface of the flow field. As taught by *In re Best*, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977): "Thus the claiming of a new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable". Turpin discloses a flow field plate which is materially and structurally identical to that of instant application and therefore one would expect that power deliverable of the flow field plate will inherently be similar at the same current densities and voltage.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

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4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).
6. Claims 7, 13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Turpin (GB 2375222, already of record) as applied to claims 11-6, 10-12, 14, and 16-20, above and further in view of Abdou et al. (WO 02/069426, hereafter referred to as Abdou, already of record)

Regarding claims 7, 13 and 15, Turpin discloses lands with triangular corners but does not expressly teach lands with diamond, hexagon, square or triangular on hexagonal array. In the same field of endeavor Abdou discloses diamond (Fig. 1B) and hexagonal (Fig. 1A) lands which are aligned on a hexagonal array (Fig. 1A). Therefore, it would have been obvious for the person with ordinary skills in the art at the time the invention was made to incorporate land shapes of Abdou in the flow field of Turpin to change the flow direction as thought by Abdou as so would have been within the choice of practitioner in the art.

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Turpin (GB 2375222, already of record) as applied to claims 1-6, 10-12, 14, and 16-20, above and further in view of Taniguchi et al. (JP 06-084526, already of record).

Regarding claim 8, Turpin does not expressly disclose a permeable wall separating fluid deliver and removal channels. Taniguchi et al. teach a separator plate having ribs for gas paths made of porous carbon (Abstract) and thus are permeable and capable of being adapted to transfer gas from the delivery channels to the removal channels. Therefore, it would have been obvious for the person with ordinary skills in the art at the time the invention was made to use porous carbon as the material for flow field plate to allow gas/fluid permeability between delivery and removal channels as doing so would have been within the choice of practitioner in the art.

8. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Turpin (GB 2375222, already of record) as applied to claims 1-6, 10-12, 14, and 16-20, above further in view of Taniguchi et al. (JP 06-084526, already of record) and in further view of Wilkinson et al. (US Patent 6541145).

The teachings of Taniguchi et al. as discussed above are incorporated herein.

Regarding claim 9, Taniguchi et al. teach the permeable wall between the gas delivery channels but fail to teach the claimed configurations of the walls. Wilkinson et al. teach a flow field plate with fluid distribution channels suitable for supporting weak diffusion layers (abstract) the channels of Wilkinson et al. are generally

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sinusoidally shaped (Applicant's concertinaed wall) (column 6 lines 28-30). Wilkinson et al. teach that the patterned walls between the flow channels provide an advantage over previous flow fields because the lands give support to the membrane layer adjacent the flow field (column 3 lines 30-35). Therefore, it would be desirable to incorporate the channels walls taught by Wilkinson et al. in the permeable plates of Taniguchi et al. in order to provide added support to the membrane layer.

### ***Response to Arguments***

9. Applicant's arguments with respect to claims 1-19 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LADAN MOHADDES whose telephone number is (571)270-7742. The examiner can normally be reached on Monday to Thursday from 8:30 AM to 6:00 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/LADAN MOHADDES/  
Examiner, Art Unit 1795

/Basia Ridley/  
Supervisory Patent Examiner, Art Unit 1795